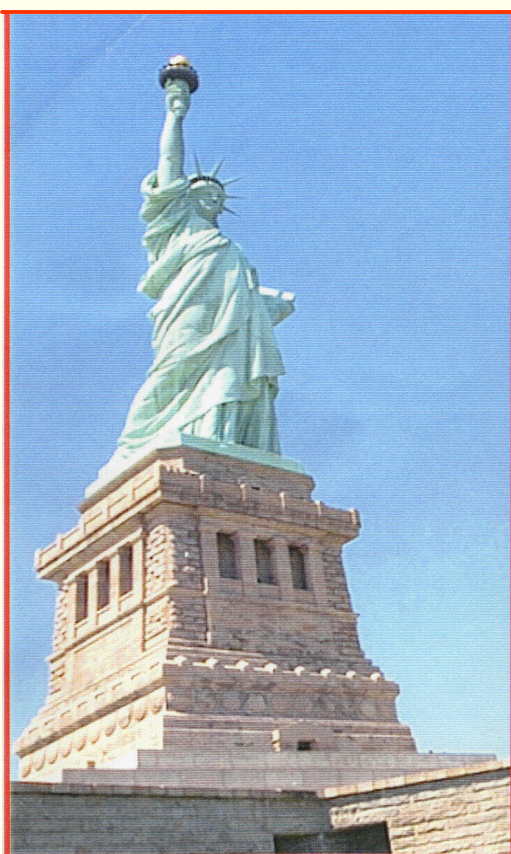


Biological Warfare Improved Response Program

Executive Summary

1998 Summary Report on BW Response Template and Response Improvements



**Prepared through a cooperative
effort among**

New York City Mayor's Office of
Emergency Management
and Departments of Fire, Health,
Environmental Protection and Police

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Managers from

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Delaware
Florida
Kansas
New Jersey

Maryland
New York State
Texas
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Department of Agriculture
Department of Defense
Department of Energy
Department of Health and Human Services
Environmental Protection Agency
Federal Bureau of Investigation
Federal Emergency Management Agency

March 10, 1999

PREFACE

The work reported here was started in April 1998 and completed in December 1998. The work was performed as a part of the Nunn-Lugar-Domenici Domestic Preparedness Program. This report presents results of an analysis of domestic response to an act of biological terrorism. Findings contained in the report will be reduced to practice and tested before they are offered to U.S. cities for their possible adaptation and implementation. This report suggests future work to validate findings, fill gaps and assess other aspects of biological domestic preparedness. Comments and suggestions relating to response concepts contained herein are welcomed and should be directed to: Dr. Richard Hutchinson, U.S. Army Soldier and Biological Chemical Command, ATTN: AMSSB-RTD-D, Building E3330, Room 154, 5183 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5424, telephone 410-436-3382, e-mail: richard.hutchinson@sbccom.apgea.army.mil or Dr. Mohamed Mughal, U.S. Army Soldier and Biological Chemical Command, ATTN: AMSSB-RTD-D, Building E5307, 5183 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5424, telephone 410-436-4921, e-mail: mohamed.mughal@sbccom.apgea.army.mil

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BW Improved Response Program Team



EXECUTIVE SUMMARY

1. Program Background. In response to growing concerns regarding domestic terrorism, the 104th Congress passed Public Law 104-201, the National Defense Authorization Act for Fiscal Year 1997. In addition to providing our nation's first responders with training regarding emergency response to weapons of mass destruction, this legislation required that the Secretary of Defense develop and carry out a program for testing and improving the responses of Federal, State, and local agencies to emergencies involving biological and chemical weapons. As a result, the U.S. Army Soldier and Biological Chemical Command of the Department of Defense, in partnership with the Department of Health and Human Services, the Federal Emergency Management Agency, the Federal Bureau of Investigation, the Environmental Protection Agency, and the Department of Energy, developed the Biological Weapons (BW) Improved Response Program (IRP). This partnership was formed to assist all agencies with their responsibilities in responding to a biological incident. For example, the Department of Health and Human Services is the lead Federal agency to plan and prepare for a national response to medical emergencies arising from terrorist use of weapons of mass destruction, Presidential Decision Directive 62. A companion chemical warfare IRP is focusing on enhancing responder protection and detection and on mass casualty decontamination.

The BW IRP is a multi-year program designed to identify, evaluate, and demonstrate the best practical approaches to improve BW domestic preparedness. A multi-agency team comprising over 60 experienced and working emergency responders and managers and technical experts from local, State, and Federal agencies from around the nation was assembled to execute the program (see BW IRP Team, page iii). New York City was a full partner in this effort along with the State of New York and the New York National Guard. In addition to the Federal agencies mentioned above, the U.S. Department of Agriculture participated throughout the program. There were two primary products from the 1998 BW Improved Response Program: a BW Response Template and a prioritized list of response gaps and response improvement concepts. This report is a summary of the Team's first-year efforts, which constitute Phase 1 of the program.

2. Problem. The overriding consequence of a large-scale unannounced BW attack will be the rapid emergence of large numbers of casualties. Response systems need to anticipate and be robust enough to deal with this possibility. As much as possible, a response system should be able to detect and identify the medical problem at the earliest moment, administer appropriate medical prophylaxis to avoid disease in exposed victims, and then be able to keep up with the onset of casualties so that all are dealt with in a supportive and non-chaotic manner. Due to high-dose effects, the ability to save many of the casualties exposed to lethal diseases, even with immediate medical treatment, will be diminished. Therefore, the response systems should have the capability to deal with high numbers of fatalities. Casualties from an attack on a subway or building could be dispersed over wide metropolitan, multi-state, or multi-national areas. Conversely, an outside release against a residential area could result in severe incapacitation of entire apartment complexes within one geographic location.

In short, a large-scale BW attack would result in a *catastrophic medical emergency*. As later assessments in this report will show, such an emergency would quickly saturate local emergency response and medical assets unless plans to cope with such an incident are in place beforehand. Such plans do not exist at this time for most cities. The problem then becomes: What would be an effective strategy for a city to cope with a BW attack, and how could that strategy be integrated across State and Federal levels?

3. Resolution. The BW IRP team identified the need for and proceeded to formulate a generic BW Response Template that embodies the concepts and the specific activities that a city could perform to respond effectively to a BW incident. The template, described in detail in the report, is a listing of activities that would need to be performed to respond to major BW terrorist incident. These are organized into groups that we refer to as components of the response template. Together the components represent an integrated response system. The Team developed timelines for each response activity in order to see how the activities could work together to deal with the dynamics of the onset of casualties for different attack scenarios. The Team then analyzed the personnel and material resources needed to perform each response activity. Lastly, the Team estimated the sources and timing of personnel resources from local, State, and Federal assets in

order to determine the overall practicality of the response template and identify shortfalls. Throughout, the Team took a “bottom up” approach and *let the problem drive the solution*.

The template could be used by any city *as a starting point* to formulate its local plans, protocols, and preparations to respond to a BW incident. The template offers the following advantages:

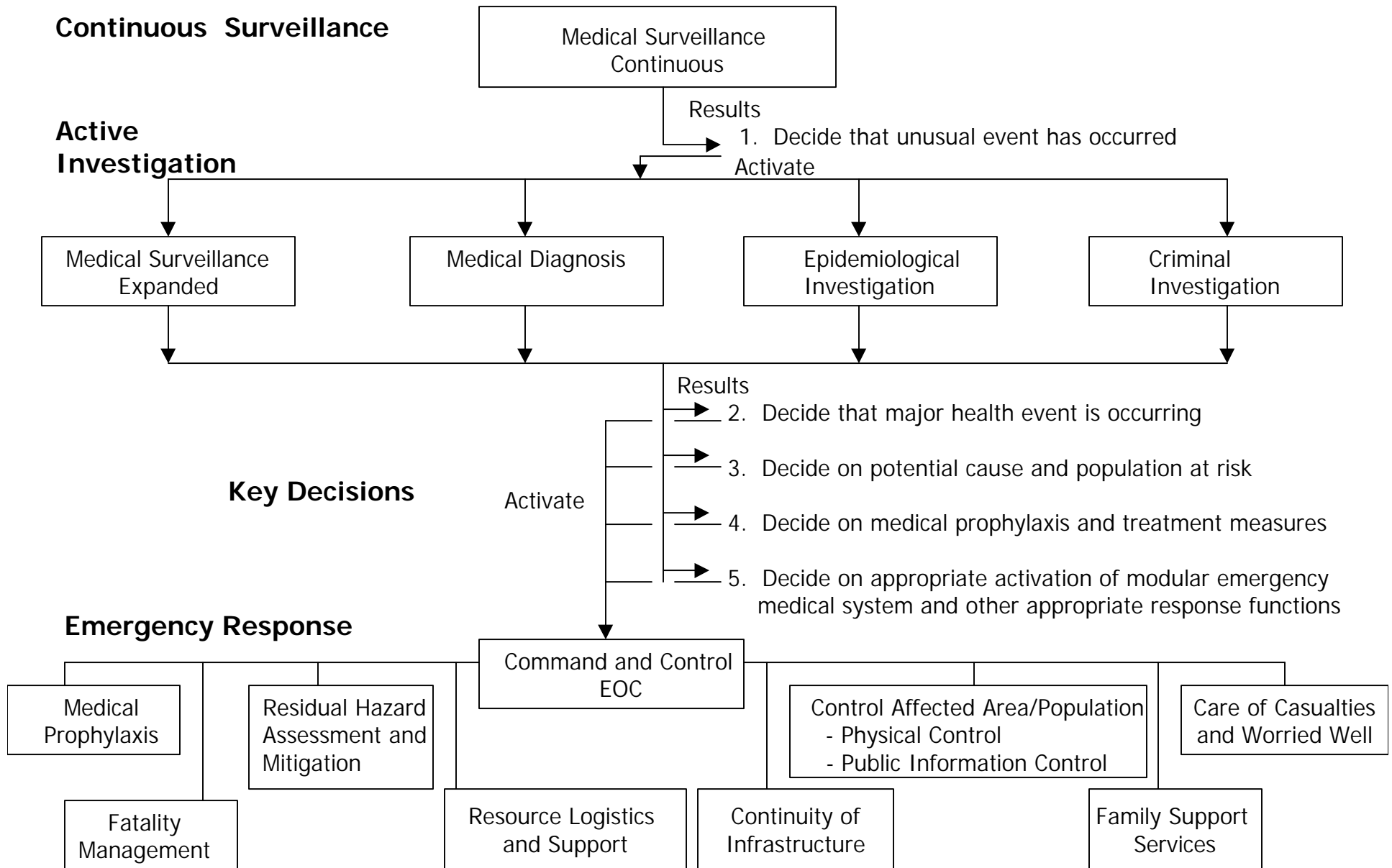
- (1) It is a useful format through which to share the results of the in-depth analyses performed here with other cities to assist them in determining how they would respond to a BW attack.
- (2) Commonality in response concepts and medical modules among all cities could be enhanced if they started their planning from a common response template. This commonality would facilitate the rapid and efficient augmentation of the city’s assets with State, regional, and Federal assets when responding to a large-scale BW attack. It could also facilitate stronger mutual aid agreements among adjacent localities.
- (3) The template appears to have application to any catastrophic medical emergency. Its adaptation by a city would significantly enhance its overall emergency preparedness.

Thus, the BW Response Template can serve as a useful point of departure for cities and States in preparing their plans to respond to a BW terrorist attack. Major components of the generic BW Response Template are depicted in Figure ES-1. Five key operational decisions made by city officials will drive the response. These operational decisions divide the response template into three phases: continuous surveillance, active investigation, and emergency response. These phases may overlap and occur concurrently, as would other crisis and consequence management activities. The components, described briefly below, are designed to work together as an integrated BW response system.

Medical surveillance needs to operate continuously and provide non-specific detection of medical activities above established baselines in order to improve the chances of detecting unusual medical events sooner rather than later. Preliminary **medical diagnosis** would be undertaken locally with samples sent to the Centers for

Figure ES-1

BW Response Template Component and Key Decisions



Disease Control and Prevention, U.S. Army Medical Research Institute of Infectious Diseases, or other State, or local specialty laboratories for identification and confirmation. **Epidemiological investigation** would include interviews and diagnoses to determine the distribution of medical cases. **Criminal investigation**, in addition to meeting the law enforcement needs of a terrorist incident, could complement the epidemiological investigation.

The results of these multiple investigations would be utilized by local officials to first assess whether a major health event is occurring, and then to help determine the potential cause and identify the population at risk. Local officials could then make timely decisions on medical prophylaxis, treatment measures, and emergency medical measures.

Medical prophylaxis involves the distribution and medical application of appropriate antibiotics, vaccines, or other medications in order to *prevent* disease and death in exposed victims. Because of uncertainties as to who was exposed, treatment may be applied to a much greater number of people than those actually exposed and may even be given to the entire city population.

Residual hazard assessment and mitigation encompasses a set of activities that would assess and protect the population from further exposure to the BW hazard. The risks from residuals are small compared to the prime attack but may still warrant attention. Assessment and mitigation can include environmental sampling, decontamination, and insect and animal control measures as applicable.

Control of affected area and population is divided into two major sub-elements:

- 1) **Physical control** would provide crowd control and security at hospitals, emergency medical facilities, fatality handling sites, and other vital installations such as airports, utility sites, bridges, and tunnels, as well as patrol of affected areas to maintain security.
- 2) **Public information and rumor control** would inform and instruct the population in ways that enhance emergency response and avoid panic. Particular attention would be needed to provide reliable information and subject matter experts to the media to avoid

panic and the need for media to find their own “experts” who may provide inaccurate or sensationalized information.

Care of presented casualties and worried well along with medical prophylaxis form the backbone of the BW Response Template. To cope with high numbers of BW casualties and those that think they are casualties, “the worried well,” the Team developed the concept for a “Modular Emergency Medical System.” Under this concept, public and private area hospitals would admit BW casualties until they approach full capacity while operating under their internal emergency operations plans. Then the centers and functions of the modular emergency medical system would be activated as depicted in Figure ES-2.

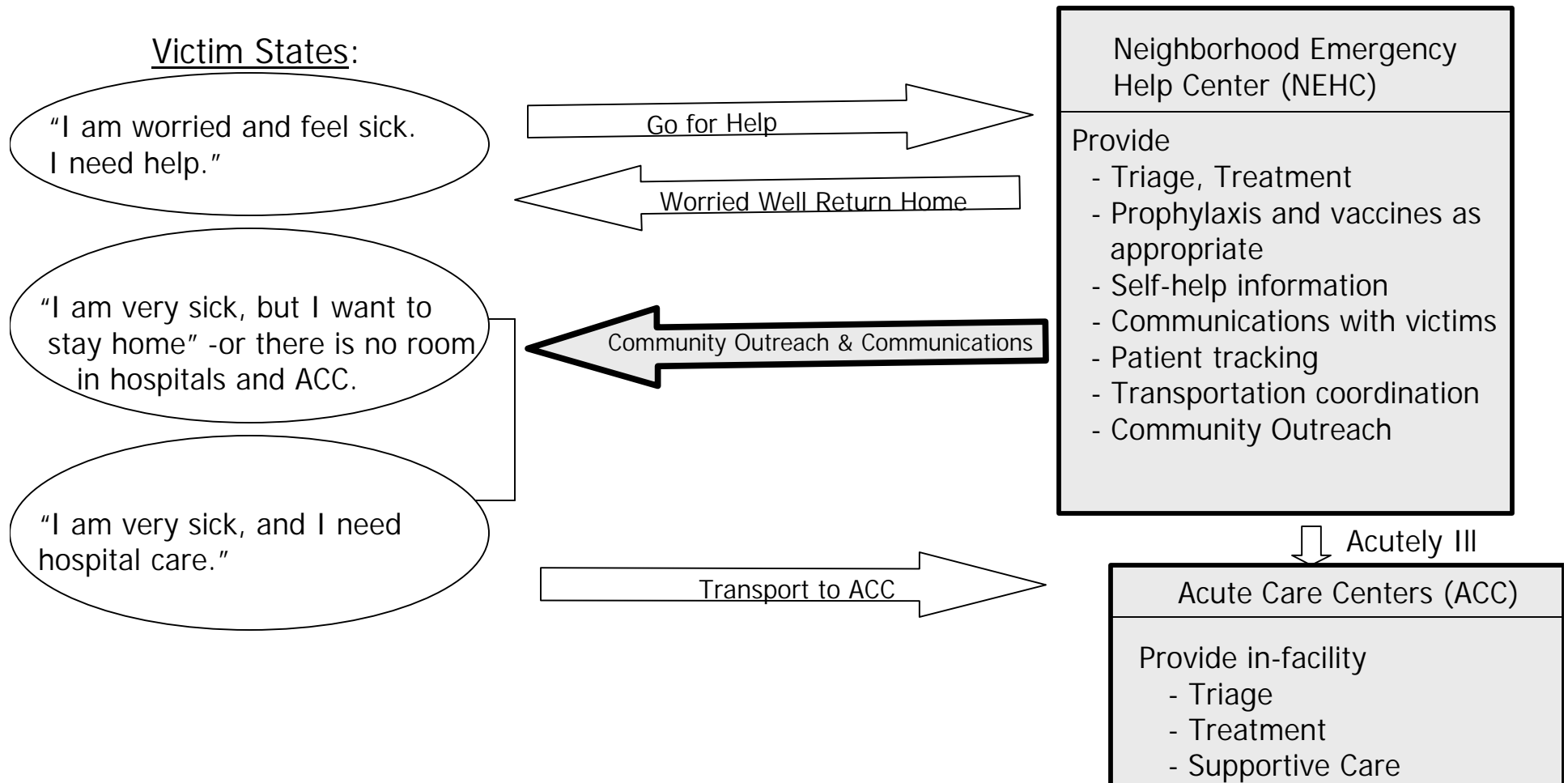
Existing clinics would be expanded into neighborhood emergency help centers (NEHC) to provide the primary point of entry into the emergency medical system for BW patients and the worried well. The centers would provide triage and distribute medical prophylaxis, medications, and self-help information. A community outreach function would be performed by police, firefighters, community health personnel, and other officials to link home-bound patients to the neighborhood emergency help centers. Community outreach personnel would provide limited medical care by mobilizing citizen home care efforts and would assist in quickly distributing medical prophylaxis and self-help information. Acute care centers (ACC) would be established in structures close to the area hospitals to provide definitive and supportive care for acutely ill BW patients that exceed hospital capacity. Non-BW hospital patients that were not in a critical condition could be moved to other hospitals outside of the impacted area in order to provide additional hospital space for BW patients. The neighborhood emergency help and acute care centers could be established on a modular basis and, in concert with the community outreach function, would provide a flexible and effective capability to respond to a BW attack.

When city officials decide that a major health event is occurring, they would activate the local **command and control emergency operations center (EOC)** and implement incident/unified command. A unified medical branch would be established within this

Figure ES-2

Modular Emergency Medical System

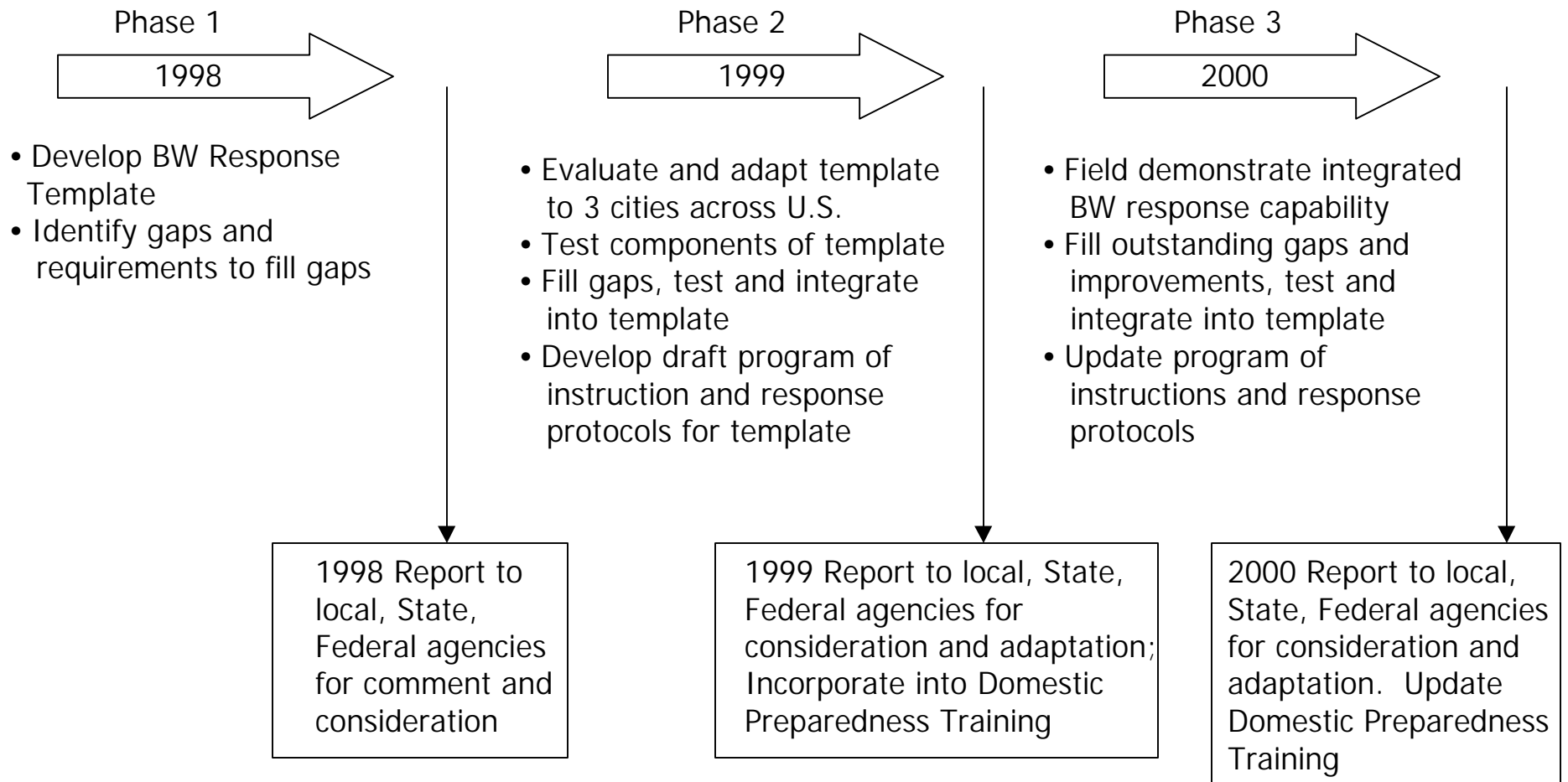
Key Emergency Centers and Community Outreach



command structure, and representatives from local, State, and Federal agencies would be requested at the local EOC. **Resource and logistic support** would establish mobilization centers and distribution points for incoming supplies. A central reception center would receive incoming State and Federal support personnel and provide instructions, accreditation and assignments. It is likely that most if not all 12 of the Emergency Support Functions under the Federal Response Plan would be activated. **Fatality management** would include the conversion of regional morgues to provide rapid central processing of remains and the establishment of long-term storage facilities using refrigerated containers to hold remains for final disposition. **Continuity of infrastructure** would activate local continuity of operations plans when disaster-related absenteeism exceeded critical thresholds. **Family support services** would provide information hotlines and implement central coordination of volunteer service organizations.

4. Status. This report, which completes Phase 1 of the BW IRP, presents the products to date: 1) a BW Response Template, 2) a list of identified gaps and possible improvement opportunities to further enhance BW response, and 3) operational and technical requirements associated with each gap and improvement to help guide future efforts to improve the template. In Figure ES-3, we show how these products relate to our future plans. In Phase 2 of the program, three or more cities, geographically dispersed and of varying populations, will evaluate the template and adapt it to their emergency response systems. This assessment will provide feedback on the general applicability of the template and will indicate how it can be adapted to specific cities. In addition, components of the template will be field tested at various locations to determine and improve their efficacy and to see if the estimated staffing levels are valid. Results from the component tests and the city evaluations will be used to refine the template. In Phase 3, several cities will be asked to adapt and to implement the BW Response Template to their location and to demonstrate the resulting integrated BW response system in field exercises. These exercises will provide an overall proof of principle for the BW Response Template as an integrated emergency response system.

Figure ES-3 BW Improved Response Program Plan



In addition, effort is underway to fill gaps in the response template identified during Phase 1 of the program. Solutions to the gaps will be tested and, if successful, integrated into the response template. Work is also underway to develop a training program of instruction and draft implementing protocols for the BW Response Template in order to provide a convenient starting point for city adaptation and implementation of the template.

Copies of this report will be made available to local, State, and Federal officials so that they may review the findings and make suggestions regarding the response template and solutions to identified gaps. Results from Phases 2 and 3 will likewise be made available. We envision that the response concepts described herein will continue to be refined and improved as the BW IRP interacts with an increasing number of responders and city, State, and Federal officials.

5. Conclusions and Insights. In addition to the above products, the Team's analyses resulted in a number of conclusions and insights:

- a. A BW terrorist event would primarily represent a public health *catastrophic medical emergency*, as opposed to a HAZMAT incident, which would be the focus of a chemical weapons incident.
- b. An organized, effective emergency response to a large-scale BW attack involving a million or more casualties appears possible. The BW Response Template represents an integrated consequence management system to facilitate such a response. The template appears to have applicability to any catastrophic medical emergency. Thus, its adaptation by cities would enhance overall local, State, and National emergency preparedness.
- c. Effective response to a major BW incident must be led by the local community. Local pre-planning before the event, and rapid implementation of the plan following an incident, would be required to effectively cope with a major BW terrorist incident.
- d. Since the emergency response functions that comprise the BW Response Template already exist, the best strategy for preparing for an effective response to BW terrorism would be to effectively manage existing resources to accommodate the complexities of a BW attack. Entirely new systems and bureaucracies are neither desirable nor necessary. Because existing emergency response systems could and should be leveraged for a BW response, the Team believes that the cost for a city to plan and prepare for effective BW response would be modest. A city's main effort would be to prepare response plans and

protocols for a catastrophic medical emergency. Improved surveillance of early indicators of a disease outbreak would require ongoing, but not a large, effort.

e. The most crucial consequence of a BW attack is the huge number of medical casualties that, in turn, require a timely and focused medical response. Timely medical response can best be achieved by expanding and redirecting assets of the local medical community. Health care management systems, independent hospitals, clinics, and others in the medical community need to be willing to function as a crucial and integrated component within a larger emergency response system. In particular, local medical communities will need to make the response strategy an integrated part of their emergency planning component if the system is to be successful. To this end, the local medical community should be intimately involved in the city's effort to plan, implement, and test their BW response strategy.

f. City officials will need to quickly make difficult decisions on mass prophylaxis, initiation of emergency medical operations, and mobilization of citizen volunteers. These decisions may need to be made on a presumptive basis to reduce the number of casualties and fatalities and to keep pace with the onset of casualties. City officials should understand the issues and options surrounding these decisions before the event in order to be prepared to make these life-impacting judgements under a period of intense stress.

g. Timing the emergency response to keep pace with the dynamics of casualties and needed prophylaxis appears to be the most difficult aspect of coping with a large BW incident. There will be a small window of opportunity (hours to several days, depending on the agent) between identification of the medical problem and the advent of peak levels of casualties. Further, any delay in the application of appropriate prophylaxis will cost additional lives in the case of a lethal agent like anthrax. These considerations drove a response template that is based on expanding and re-orienting local medical capabilities to immediately begin coping with the crisis. Cities may not have the personnel resources to fully staff the needed acute care and neighborhood emergency help centers or to fully perform community outreach. However, with preplanning, they can quickly establish these capabilities, albeit with skeleton staffs, and begin to address the situation. Then, when State, regional, and Federal assets arrive, they can immediately augment the local response and achieve an integrated, robust capability.

h. Control of the affected population under conditions of extreme fear and possible panic is necessary for effective response. Physical control and security at medical facilities, vital installations such as airports, and affected city areas need to be considered in advance. A greater challenge is that public information and rumor control will be needed to keep the public accurately informed and to quell potential panic. Preplanning of public announcement approaches could help local officials to obtain public cooperation with the response. Speaking with a unified voice through a joint information center will be vital.

i. Considering the potential magnitude of casualties and the associated scale of response, a competently conducted BW attack against a domestic locality would truly constitute a National, and not a local, crisis. The full magnitude and diversity of the required response will necessarily draw from and stress State, regional, and national-level assets. Non-traditional response approaches, such as State and National calls for volunteers, may

be needed. These calls would likely come from the President and the Governor of the affected State. Additionally, the social, political, economic, and psychological effects will truly be national in scope.

j. The above approach would be substantially strengthened if cities adopted similar configurations and functions for their emergency medical modules. Then personnel from State and Federal organizations, as well as help from other cities and regions, could be familiar with the operations of an acute care facility, for example. This familiarity would help provide quick, uniform, and effective augmentation of the affected city's assets.

k. In their efforts to prepare for a BW event, we suggest that cities plan to respond to a BW attack that potentially infects 10% of their population. The Team observed that coping with this level of casualties would exercise all aspects of a BW response system and would require planning for the rapid augmentation of city's assets by State, regional, and Federal assets.

l. The Team's analyses concentrated on the response to and mitigation of the immediate consequences of geographically focused BW attacks spanning the first three weeks following an attack. Long-term problems, such as chronic ailments among casualties and economic disruptions in affected areas, were not within the scope of our effort. It may be prudent for another interagency group to analyze and develop strategies to mitigate these long-term effects. Further analyses of response measures for announced BW attacks, attacks with highly contagious diseases, and attacks distributed around the country are needed.

m. The potential for severe economic loss from attack on agriculture targets was highlighted during the program. Effort to develop an integrated agriculture BW response system appears warranted. Additional work to develop BW response measures for attacks on food processing plants and on ready-to-eat foods is needed.

n. Finally, although our legislative mandate was to concentrate on mitigating the consequences of an actual event, we believe the effective prevention of or protection from such events is also a vitally important area for our government to concentrate on. The costs in terms of suffering, death, and economic loss from a BW attack, even with the best response, would be unacceptable. Therefore, effort to determine ways to protect buildings and other structures from biological attack appear warranted. Immediate detection of an attack would allow for the rapid distribution of prophylaxis, which would save many lives in the case of an anthrax attack. Efforts by the law enforcement community to prevent such attacks are of inestimable value.